

# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Improvements relating to the Suppression of Static Interference in Radio Receivers Installed in Motor Vehicles

We, MORRIS MOTORS LIMITED, of Cowley, Oxford, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to the suppression of static interference in radio receivers installed in motor vehicles.

Background noise, manifested as a loud hissing, is normally emitted from a radio receiver operating in a moving vehicle, whenever the vehicle's brakes are applied. This noise is caused by spark discharge of static electricity which is designated brake static, because it is generated by the friction between the braking surfaces. The friction between the tyres and the road also generates static electricity, known as wheel static, which on occasion may give rise to background noise in the vehicle's radio receiver.

The procedure commonly employed for suppressing static interference of the character indicated necessitates first cleaning portions of the brake shoes with a wire brush, and then applying graphite paint to the cleaned surfaces and to the edges of the brake linings, so as to establish an electrically - conductive path between the brake linings and earth, as represented by the underframe of the vehicle. This procedure, however, has the disadvantages of being both costly and slow. The work which it entails takes approximately two hours to carry out for each vehicle treated.

It has been found that most of the static interference that occurs in the radio receiver of a motor vehicle originates at the hubs of the front wheels. This is believed to be attributable to the circumstance that the front wheels are electrically insulated from earth connection to the chassis of underframe of the vehicle by the lubricating grease provided between the

wheel hub bearings and the associated stub axles.

According to this invention static interference in a radio receiver installed in a motor vehicle is suppressed by the provision of means effecting electrically - conductive inter - connection of each stub axle of the vehicle and the associated front wheel. Such provision, which suppresses both brake static and wheel static, is not only much cheaper and can be accomplished in far less time than the existing graphite paint treatment, but appears to be more effective.

In particular the invention comprises a front wheel hub assembly of a motor vehicle, in which the stub axle is electrically connected to the wheel hub by a resilient contact device which is attached to the usual grease - retaining hub cap, and which makes contact with the end of the stub axle.

The preferred manner of carrying the invention into effect will now be described, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of a front wheel hub assembly of a motor vehicle, showing the associated grease - retaining cap equipped with means for carrying out the invention, and ready to be fitted; and

Figure 2 is a fragmentary sectioned side elevation showing the cap fitted to the hub.

The usual grease - retaining cap 1 of each front wheel hub 2 of the vehicle is fitted with a resilient electrical contact device arranged to make contact with the end of the stub axle 3 when the grease - retaining cap has been fitted to the wheel hub (Fig. 2). Each grease - retaining cap 1 has a central vent hole 4, and this proves very convenient for the present purpose. A steel wire spring 5 of spiral form is anchored at one end of the outer face of the grease - retaining hub cap 1, by a fixing screw 6 inserted in a hole drilled in the cap

near its rim, and the free end 7 of the wire spring is bent so that it passes through the existing central vent hole 4 in the cap and bears resiliently against the end of the stub axle 3. Actually, the tip of the contact wire 7 lodges in the existing depression 8 made by a centre punch. It is, of course, necessary to wipe off any grease from the outside of the grease - retaining hub cap and from the mouth of the hub, before the cap is fitted.

It will be appreciated that other forms of resilient contact device may be employed. For example, instead of being a spirally - wound wire spring, it could be constituted by a cantilever blade spring fitted at its free end with a contact pin arranged to pass through the central vent hole in the hub cap.

The resilience of the contact devices described ensures that continuous contact is maintained in service. Moreover, the fact that relative rotation occurs between the contacting surfaces tends to keep them clean.

#### WHAT WE CLAIM IS:—

1. A method of suppressing static interference in a radio receiver installed in a motor vehicle, characterized by the provision of means effecting electrically - conductive inter-

connection of each stub axle of the vehicle and the associated front wheel.

2. A method as claimed in claim 1, which consists in providing a resilient electrical contact device between each stub axle of the vehicle and the usual grease - retaining cap associated with the corresponding front wheel hub.

3. A front wheel hub assembly of a motor vehicle, in which the stub axle is electrically connected to the wheel hub by a resilient contact device which is attached to the usual grease - retaining hub cap, and which makes contact with the end of the stub axle.

4. A front wheel hub assembly according to claim 3, in which the contact device comprises a spirally - wound wire spring anchored at one end to the outer face of the hub cap and having its free end bent to pass through the existing central vent hole in the hub cap.

5. Means for suppressing static interference in a radio receiver installed in a motor vehicle, substantially as described with reference to the accompanying drawings.

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### PROVISIONAL SPECIFICATION

#### Improvements relating to the Suppression of Static Interference in Radio Receivers Installed in Motor Vehicles

We, MORRIS MOTORS LIMITED, of Cowley, Oxford, a British Company, do hereby declare this invention to be described in the following statement:—

This invention relates to the suppression of static interference in radio receivers installed in motor vehicles.

Background noise, manifested as a loud hissing, is normally emitted from a radio receiver operating in a moving motor vehicle, whenever the vehicle's brakes are applied. This noise is caused by spark discharge of static electricity which is designated brake static, because it is generated by the friction between the braking surfaces. The friction between the tyres and the road also generates static electricity, known as wheel static, which on occasion may give rise to background noise in the vehicle's radio receiver.

The procedure commonly employed for suppressing static interference of the character indicated necessitates first cleaning portions of the brake shoes with a wire brush, and then applying graphite paint to the cleaned surfaces and to the edges of the brake linings, so as to establish an electrically - conductive path between the brake linings and earth, as represented by the underframe of the vehicle. This procedure, however, has the disadvantages of being both costly and slow. The work which it entails takes approximately two hours to carry out for each vehicle treated.

It has been found that most of the static interference that occurs in the radio receiver of a motor vehicle originates at the hubs of the front wheels. This is believed to be attributable to the circumstance that the front wheels are electrically insulated from earth connection to the chassis or under frame of the vehicle by the lubricating grease provided between the wheel hub bearings and the associated stub axles.

According to this invention static interference in a radio receiver installed in a motor vehicle is suppressed by the provision of means effecting electrically - conductive inter - connection of each stub axle of the vehicle and the associated front wheel. Such provision, which suppresses both brake static and wheel static, is not only much cheaper and can be accomplished in far less time than the existing graphite paint treatment, but appears to be more effective.

A convenient way of carrying the invention into effect is to fit the grease - retaining cap of each front wheel hub with a resilient electrical contact device arranged to make contact with the end of the stub axle when the grease-retaining cap has been fitted to the wheel hub. Each grease - retaining cap has a central vent hole, and this proves very convenient for the present purpose. A steel wire spring is anchored at one end to the outer face of the grease - retaining hub cap, by a fixing screw

5 inserted in a hole drilled in the cap near its rim, and the free end of the wire spring is bent so that it passes through the existing vent hole in the cap and bears resiliently against the end of the stub axle. Actually, the end of the contact wire lodges in the depression made by a centre punch. It is, of course, necessary to wipe off any grease from the outside of the grease-retaining hub cap and from the mouth of the hub, before the cap is fitted.

10 It will be appreciated that other forms of resilient contact device may be employed. For

example, instead of being a wire spring, it could be constituted by a cantilever blade spring fitted at its free end with a contact pin arranged to pass through the central vent hole in the hub cap. 15

The resilience of the contact devices described ensures that continuous contact is maintained in service. Moreover, the fact that relative rotation occurs between the contacting surfaces tends to keep them clean. 20

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1 SHEET

COMPLETE SPECIFICATION

*This drawing is a reproduction of  
the Original on a reduced scale.*

